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EM Sounding Characterization of Land Management toward Estimation of Potential Pollutant Load from Non-point Sources.

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A multi-frequency electro-magnetic (EM) sounding method was applied to the agriculture field to investigate the characteristics of non-point pollution load. Soil environmental properties such as differences in land management were analyzed with electrical conductivity (EC) maps. In addition, vertical EC profiles obtained from EM soundings were compared with EC in drainage ditch or river water. As results, surface soil EC maps successfully extracted the differences in land management affected by fertilizer application. Moreover, surface EC at the vertical profiles strongly related with drainage ditch or river EC, showing most of the EC in the drainage river was explained by surface EC maps at the EM sounding data. Therefore, obtained EC maps show potential load in drainage river before infiltration water was processed, which is beneficial for watershed survey, where river water is not always available and the effect of land management becomes sometimes black box.

Keywords: EM sounding, Soil environment, Pollution load, Watershed